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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/980,443	08/08/2002	Hong Lye Oh	851663.432USPC	3555

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EXAMINER

HUBER, JEREMIAH C

ART UNIT

PAPER NUMBER

2621

DATE MAILED: 05/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/980,443

Applicant(s)

OH ET AL.

Examiner

Jeremiah C. Huber

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 May 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 4-5, 7-8, 10 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Morgan et al (GB2308774).

In regard to claim 1 Morgan discloses a method for motion estimation for use in a moving pictures sequence wherein data representing the picture in the sequence comprises a plurality of data blocks (Morgan Fig. 1) that includes selecting a group of related data blocks from the plurality of related data blocks of the picture (Morgan page 8 line 33 to page 9 line 7), for each data block in the selected group obtaining a corresponding block motion vector from a previously processed picture in the moving pictures sequence (Morgan page 8 line 33 to page 9 line 19), classifying the block motion vectors from the selected group into a plurality of sub-groups and determining a primary and a plurality of secondary global motion vectors corresponding to block motion vectors (Morgan page 9 line 31 to page 10 line 25 and page 13 line 24 to page 16 line 5) and selecting the primary and or secondary motion vectors for use in defining one or more search windows for each block in the selected group to enable block matching with a reference picture (Morgan page 10 line 24 to page 11 line 8).

In regard to claim 2 refer to the statements made in the rejection of claim 1 above. Morgan further discloses grouping by a spatial clustering technique (Morgan page 15 lines 14-19).

In regard to claim 4 refer to the statements made in the rejection of claim 1 above. Morgan further discloses determining a match between each block in the selected group and a matching block in one or more search windows for that block in the reference picture and determining a computed motion vector between each block in the selected group and its matching block (Morgan page 10 line 26 to page 11 line 8).

In regard to claim 5 refer to the statements made in the rejection of claim 4 above. Morgan further discloses storage of motion vector data (Morgan page 15 lines 6-14).

In regard to claim 7 refer to the statements made in the rejection of claim 1 above. Morgan further discloses analyzing the distribution of global motion vectors and selecting a motion estimator scheme on the basis of a distribution metric (Morgan page 10 line 26 to page 11 line 8, page 12 line 31 to page 13 line 8 and page 16 lines 25-28).

In regard to claim 8 refer to the statements made in the rejection of claims 1 and 7 above.

In regard to claim 10 refer to the statements made in the rejection of claims 1 and 8 above.

In regard to claim 16 refer to the statements made in the rejection of claims 1 and 8 above.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morgan.

Morgan discloses a motion estimation method as stated in the rejection of claim 1 above. Morgan further discloses representing a group of motion vectors by the most frequently occurring motion vector for a group of motion vector candidates within a certain spatial distance (Morgan page 15 lines 14-19). It is noted that Morgan does not disclose computing global motion vectors as averages. However the examiner takes official notice that use of an average as a representative metric for a group was common and notoriously well known in the art at the time of the invention. It is therefore considered obvious that one of ordinary skill in the art at the time of the invention would recognize the advantage of incorporating averaging, as was commonly known in the art, to represent the group of motion vector candidates in Morgan, in order to more accurately represent the motion vector candidate group.

5. Claims 6, 9 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morgan in view of Yagasaki et al (5428396).

In regard to claims 6, 9 and 17, Morgan discloses a motion estimation method as argued in the rejection of claims 1 and 8 above. Morgan further discloses processing based on motion vector length (Morgan page 14 line 21 to page 15 line 4). It is noted that Morgan does not disclose details of variable length coding (VLC). However, Yagasaki discloses a method VLC for motion vectors that adapts to optimally fit a given range of motion vectors (Yagasaki col. 8 line 26 and col. 9 line 8). It is therefore considered obvious that one of ordinary skill in the art at the time of the invention would recognize the advantage of including in Morgan a VLC coding method as taught by Yagasaki in order to reduce space necessary to store the video data.

6. Claims 11-12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morgan in view of Mizuno (6249550).

Morgan discloses a motion estimation method as stated in the rejection of claims 1 and 8 above. It is noted that Morgan does not disclose details of multiple motion estimators. However Mizuno discloses a motion estimation method that uses two motion estimators in order to process field based video (Mizuno fig. 11 and col. 18 line 63 to col. 19 line 43). It is therefore considered obvious that one of ordinary skill in the art would recognize the advantage of including plural motion estimators as taught by Mizuno in the invention of Morgan in order to process field based video.

In regard to claim 12 refer to the statements made in the rejection of claim 11 above. However, Mizuno further a method wherein the search range is determined based on stored motion vector data (Mizuno col.9 lines 6-11).

In regard to claims 14 refer to the statements made in the rejection of claims 1 and 8 above.

7. Claims 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morgan in view of Mizuno as applied to claim 11 above, and further in view of Yagasaki.

The modification of Morgan in view of Mizuno does not disclose details of variable length coding (VLC). However, Yagasaki discloses a method VLC for motion vectors that adapts to optimally fit a given range of motion vectors (Yagasaki col. 8 line 26 and col. 9 line 8). It is therefore considered obvious that one of ordinary skill in the art at the time of the invention would recognize the advantage of further modifying Morgan in view of Mizuno to include a VLC coding method as taught by Yagasaki in order to reduce space necessary to store the video data.

In regard to claim 15 refer to the statements made in the rejection of claims 11 and 13 above.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Egusa et al discloses a motion vector detecting device which separates blocks into groups based on similar motion vectors. Yokoyama discloses a motion vector detecting method in which a search range is determined based on motion vector history.

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Nishikawa discloses a motion estimation method using grouped candidate motion vectors to search for a true match. Bergen et al discloses a motion analysis technique in which a global and local vectors are determined in multiple sub areas which can be grouped. Jacquin et al discloses a scene modeling method which determines global motion vectors and uses them to group objects as background or foreground. Barbero et al discloses a method of determining global motion vectors for an entire picture or for sub groups within a picture.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremiah C. Huber whose telephone number is (571)272-5248. The examiner can normally be reached on Mon-Fri 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571)272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeremiah C Huber  
Examiner  
Art Unit 2621



YOUNG LEE  
PRIMARY EXAMINER